

WHAT IS CLAIMED IS:

1. A radio frequency identification (RFID) tag device, comprising:
  - an antenna;
  - a receiver coupled to said antenna, wherein said receiver is configured to receive a symbol from said antenna, and
  - a modulator coupled to said antenna;
    - wherein said modulator is configured to receive a response value, and is configured to select one of a plurality of frequencies according to said response value to be a selected frequency signal;
    - wherein said modulator is configured to backscatter modulate said received symbol according to said selected frequency signal to produce a backscatter modulated symbol; and
    - wherein said antenna is configured to transmit said backscatter modulated symbol.
2. The tag device of claim 1, wherein said modulator is configured to amplitude modulate said received symbol according to said selected frequency signal to produce said backscatter modulated symbol.
3. The tag device of claim 1, wherein said antenna is configured to receive a RF carrier signal, wherein said receiver is configured to demodulate said received RF carrier signal to said received symbol.
4. The tag device of claim 1, wherein said modulator is configured to select a first frequency for the selected frequency signal if said response value is a first predetermined value, and is configured to select a second frequency for the selected frequency signal if said response value is a second predetermined value;
  - wherein said transmitted backscatter modulated symbol is a first backscatter modulated symbol when said modulator selects said first frequency, and said transmitted backscatter modulated symbol is a second

backscatter modulated symbol when said modulator selects said second frequency.

5. The tag device of claim 1, wherein said received symbol includes a logic low portion followed by logic high portion, wherein said modulator is configured to modulate said logic high portion of said received symbol according to said selected frequency signal to produce said backscatter modulated symbol.

6. The tag device of claim 1, wherein said modulator includes a switch.

7. The tag device of claim 6, wherein said switch is a single pole, single throw (SPST) switch.

8. The tag device of claim 6, wherein said switch is configured to modulate the received symbol by varying the return loss of said antenna according to said selected frequency signal.

9. The tag device of claim 8, wherein said switch is configured to vary the return loss of said antenna by coupling the antenna to a voltage level when the switch is on that is not equal to the RF voltage level at the antenna when the switch is off.

10. The tag device of claim 1, further comprising:

a state machine that is configured to receive said received symbol and generate said response value, wherein said response value is one of a first predetermined value and a second predetermined value.

11. The tag device of claim 10, further comprising:

a data programming unit that is configured to store a tag identification number;

wherein said state machine is coupled to said data programming unit.

12. The tag device of claim 1, further comprising:  
an oscillator that is configured to generate an oscillator frequency;  
wherein each of said plurality of frequencies is generated from said oscillator frequency.
13. The tag device of claim 12, wherein said oscillator frequency is greater than 1 MHz.
14. The tag device of claim 1, further comprising:  
an oscillator corresponding to each of said plurality of frequencies;  
wherein each of said plurality of frequencies is generated by said corresponding oscillator.
15. The tag device of claim 1, further comprising:  
an oscillator configured to generate an oscillator frequency; and  
a plurality of frequency dividers configured to each receive said oscillator frequency;  
wherein each of said plurality of frequencies is output by a respective one of said plurality of frequency dividers.
16. A reader that communicates with a radio frequency identification (RFID) tag device, comprising:  
a transmitter that transmits a radio frequency carrier signal modulated with a data symbol;  
a receiver that receives at least one backscatter symbol related to the transmitted data symbol; and  
a logic module that determines at least one backscatter frequency of said at least one backscatter symbol, wherein said logic module determines that said at least one backscatter symbol represents a first data value when said at least one backscatter frequency includes a first frequency, and determines that said at least one backscatter symbol represents a second data value when

said at least one backscatter frequency is determined to include a second frequency.

17. The reader of claim 16, wherein said first data value is a "0" bit, and said second data value is a "1" bit.

18. The reader of claim 16, wherein said first frequency is equal to 2.5 MHz, and said second frequency is equal to 3.75 MHz.

2025 RELEASE UNDER E.O. 14176